

Dynamic Managament of Loyalty Programs

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Consumer loyalty programs (LP) are popular marketing tools designed to reward high-valued customers, with the primary goal of increasing retention and promoting repeat purchases. Recent years have witnessed a fast expansion of the number and size of such programs, as well as the range of firms and industries employing them¹.

In a typical “point-based” LP, members earn and bank points (or miles) for their purchases of products or services from an issuing firm. In turn, these points can be redeemed in the future in exchange for rewards, such as additional products or services, or even cash. While the broad mechanics governing LPs are relatively stable across firms and across time, the precise terms and conditions can vary substantially, and are often subject to change. In fact, firms in many industries make modifications to their LPs with some regularity, from changing the point expiration date to redefining the type of rewards available and/or the associated point requirements.

In fact, the management of a LP interacts in complex ways with several of the firm’s functions, with significant implications on financial performance and profitability.

(a) First, from a *marketing* standpoint, LPs impact sales and profit in subtle ways. For example, while a program with valuable points can increase sales, it can also lead to increased redemptions, raising the danger of potential sales cannibalization (Kopalle et al. 2012).

(b) From a *financial accounting* perspective, LPs can directly boost or hurt a firm’s bottom line due to the way loyalty points are accounted for. Under the International Financial Reporting Standard, loyalty points constitute a promise for future service by the issuing firm, and hence count as a liability on the balance sheet.² As such, when the firm makes a sale, it is required to treat the associated points issued as a separate component of the sale, *deferring* some of the revenue as a liability, which immediately *hurts* its bottom line. In

¹For instance, the number of loyalty memberships in the U.S. tripled since 2000, reaching 3.3 billion in 2014 (Berry 2015).

²For large, established LPs, with billions of outstanding points, the resulting liability can be extremely significant. For instance, in its annual filing for 2014, Delta Airlines reported a loyalty program liability (deferred revenue) of \$4.2B, and a consolidated net profit of \$659M.

contrast, when points are redeemed or expire, the firm *recognizes* a corresponding amount of its deferred revenue as (regular) revenue, which *boosts* its bottom line. The exact amount to defer or recognize is given by the “fair value” of the associated points.

(c) From an *operations* standpoint, a multitude of routine operational decisions affect the fair valuation of points, and thus the firm’s earnings via the revenue deferral process. For instance, *ceteris paribus*, increasing cash prices for the firm’s goods would also increase the valuation of the points, as points could then be redeemed for more valuable goods. Other examples include capacity of the rewards made available (e.g., airlines’ choice of number of seats offered to frequent flyers) and investments that facilitate points redemption (e.g., IT systems, staffing decisions, etc.).

In view of the complex interplay between the LP management and its various functions, several research questions naturally arise. How should firms manage their loyalty programs given the multifaceted implications they have on their functions? When should they increase or decrease the points valuation? How should they adjust operational levers that interact with loyalty programs? What are the key drivers and how do they influence such decisions?

To address these questions, we develop a dynamic model that integrates the main marketing, accounting and operational considerations pertaining to the management of LPs. In particular, we study a firm that sells a single type of product over a discrete time horizon. With every sale, the firm issues points, which customers can redeem in the future with the firm in exchange for the product. The firm’s manager dynamically sets the retail cash price and a point price so as to maximize her expected discounted utility derived by the earnings recorded by the firm in each period. Sales and redemptions are uncertain, but depend on the number of outstanding points and the two prices. Our contributions are as follows.

1. Our paper is the first to study the dynamic management of LPs taking a holistic view of the way they both affect and are affected by the marketing, financial accounting and operations functions of a firm. We propose a novel model that affords generalizable insights and concrete managerial prescriptions.

2. We show that the deferred revenue can be thought of as an “inventory,” and that the optimal policy mimics the well-known “base-stock, list price” policy in operations management: managers should adjust the valuation of outstanding points so as to meet (potentially state-dependent) base-stock target, and should then charge cash and point prices that are consistent with this valuation and maximize net profits.
3. We identify important factors that drive LP management decisions, allowing us to make further prescriptive recommendations. For instance, we find that
 - tax optimization, earnings smoothing incentives, and/or risk/loss aversion induce managers to follow state-dependent base-stock policies for the valuation of outstanding points: base-stock targets in this case depend on current operating performance, as strong (weak) performance induce managers to increase (decrease) the valuation of outstanding points;
 - managers increase the valuation of outstanding points facing more uncertainty, higher discount factors, longer planning horizons, or lower redemption costs;
 - managers increase retail prices as they face lower redemption servicing costs;
 - in environments where sales are stationary or growing, managers tend to devalue points as they accumulate over time.

Since this is the first model tackling the management of LPs in an integrated fashion, we believe that our theoretical findings can be used to generate new ideas for analytical research, as well as a series of hypotheses that could be tested empirically in the future.

References

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